

## **Title: Anti-Coagulation Therapy and achieving the Triple Aim**

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### **INTRODUCTION**

As part of our ongoing incidence and occurrence reporting process, our Clinical Nurse Reviewers identified a trend of adverse events resulting from poor anti-coagulation management. Further analysis showed that in 2010 we had 11 adverse events with associated costs between \$2,000.00 and \$60,000.00 and a median cost of over \$12,000.00. Proper anti-coagulation management is complicated and often difficult for patients to understand. In addition to adverse events, this confusion impacts patient satisfaction and leads to poor health outcomes. We felt that by identifying and addressing the root cause of our anti-coagulation management challenges we would be able to improve patient experiences and health outcomes, while reducing the overall cost of care.

### **METHODS**

We initiated the anti-coagulation management study during the Summer of 2011. The process impacted many different departments across the organization and required diverse expertise to make meaningful change. We established a cross-functional team that represented: primary care physicians, nursing, cardiology, pharmacy, anti-coagulation specialty nurses, laboratory, quality, process improvement, clinical management, Information Services, informatics, billing and Health Education.

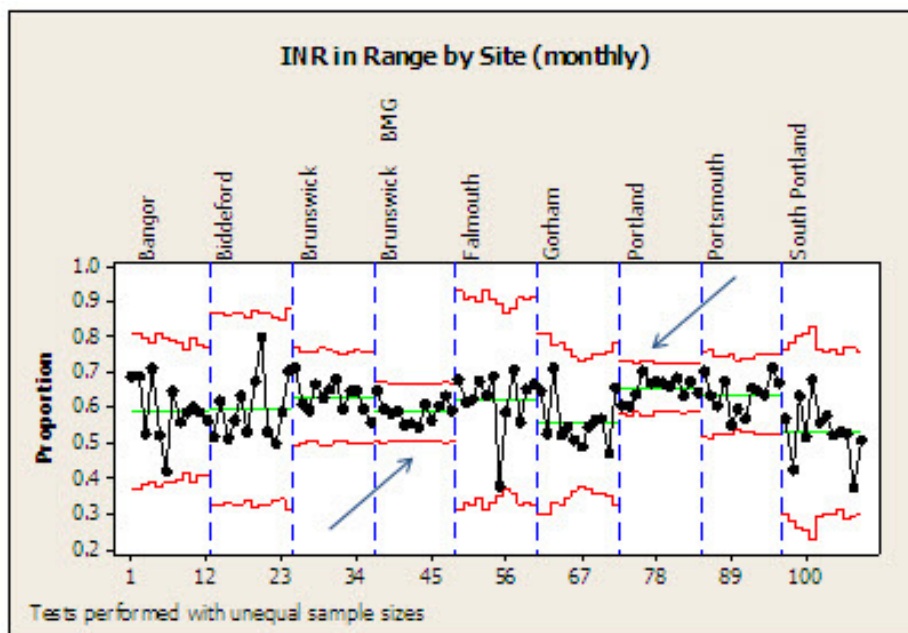
This team conducted a comprehensive analysis of the anti-coagulation management practices at all nine of our health centers and found significant variation in the way that INR values were being monitored. Several important factors were:

- Not all health centers used the same level of staffing (MA, Phlebotomist, LPN, RN or Physician) to manage anti-coagulation therapy.
- The anticoagulation algorithm that had been developed and built into the electronic medical record was not being used consistently across the sites.
- Patients were not consistently brought back in according to the established protocol.
- Patient education materials were inconsistently used and often lacked accurate and clear information.
- Patients were not always aware that anti-coagulation medications are all the same i.e. Coumadin = warfarin = Jantoven.

The next question that the team investigated was: Does the cost of poor care outweigh the cost of providing superior care? Documented costs associated with adverse events ranged between

\$2,000.00 and \$60,000.00 with a median cost of over \$12,000.00 and included: ER use, inpatient hospitalization, ambulance fees, prescriptions, radiology, laboratory and physicians expenses. However, these costs are only the tip of the iceberg as the costs associated with patient safety, loss of life, permanent disability and damage to the provider reputation are potentially much larger but difficult to attach a specific amount to.

Ultimately inconsistency and process variation were determined to be the root cause of the adverse events. Data from each health center was evaluated and revealed two locations that consistently maintained the tightest control of their INR values. Closer evaluation of these sites identified they utilized trained anti-coagulation resources with consistent use of the algorithm and documentation in the electronic health record. These sites were then identified as centers of excellence and the model for our new process.



Tightest control at the two sites with dedicated resources and most consistent use of algorithm

## RESULTS

Using the two model sites as a starting point we have now developed a comprehensive anti-coagulation management process that will help to eliminate adverse events, enhance patient experience, improve health outcomes, and reducing long term cost.

This comprehensive process includes:

1. Transitioning the anti-coagulation management process to a single licensed resource (RN or greater) at each site who will oversee management, assessment and education of our anti-coagulation patient population.

2. Development of a strong clinical competency testing process which incorporates INR Point of care testing, a shadowing program, demonstration of proficiency through both in-house testing and completion of an online anticoagulation management certification program. Ongoing support and continued education of the dedicated resource will be through the formation of a monthly Anticoagulation team meeting that will meet on a monthly/ bimonthly basis.
3. Revision of the electronic health record “warfarin form” to support the capture of patients that are managed either by specialists or through home management, while reinforcing the completion of the “warfarin questionnaire”.
4. Revisions to the patient education material guided by health literacy (provided at the time of visit as well as through the Health Education Department, and reinforced by US Family Health Plan Case management staff). Improvements include clear identification of the ordering physician, addition of the diagnosis or reason for medication, name of actual medication prescribed (Warfarin, Coumadin or Jantoven), expanded and more thorough patient information as well as visual display of pill dosing and pill color.
5. Formation of the site specific Monthly INR Test reports – that are electronically pushed out to site anti-coagulation resources, allowing them to identify whether a patient is overdue for an INR draw while defining the percent of patients in control as well as providing the ability to drill down to individual patient level of management.

## **CONCLUSION**

Achieving the Triple Aim through a strategic balance between optimal patient outcomes, superior patient/family experience and sustainable/reduced cost, is increasingly proving to be the most crucial initiative for Martin’s Point Health Care. To answer the lingering question from above: Yes, it is more cost effective to provide world class care for all patients then to anticipate increased costs for a small number of adverse events. While patients that require anti-coagulation therapy form a small percentage of the total patient population, the complexity of the care they require elevates the demand on the health center. By identifying and eliminating the root cause of our adverse events we are ensuring better outcomes, improving patient confidence and experience, and removing excessive cost through elimination of the waste associated with poor care. This one project while delivering impressive anticipated cost savings to the organization also helps to demonstrate the power of understanding the Triple Aim level of care for overall health system improvement.